



Newtown Creek Superfund Site
BERA Dispute Wrap-Up Meeting
March 21, 2017



Reference Areas – Censoring the Data Set

- Censoring Reference Area data to address outliers is appropriate, and supported by EPA's *Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites* (2002).
- Addressing outliers in Reference Envelope data is discussed in the literature – examples include:
 - *The Reference Condition: A Comparison of Multimetric and Multivariate Approaches to Assess Water-Quality Impairment Using Benthic Macroinvertebrates*. T. B. Reynoldson, R. H. Norris, V. H. Resh, K. E. Day and D. M. Rosenberg. *Journal of the North American Benthological Society*, Vol. 16, No. (Dec., 1997), pp. 833-852
 - Hunt, et al. 2001. *Evaluation and Use of Sediment Toxicity Reference Sites for Statistical Comparisons in Regional Assessments*, ET&C Vol. 20, No 6.
- Gowanus Canal and LPRSA are R2 examples that used outlier analyses to censor reference data set prior to Reference Envelope analysis.
- **Thus, EPA Region 2 supports censoring outlier data points from Reference Area data sets**



Reference Areas – Use of PEC-Q

- PEC-Q was one of the eight criteria originally used by EPA during the selection of Reference Area locations.
- Use of the mean PEC-Q method including the PAH-17 is appropriate because of the eight criteria, mean PEC-Q as a single criterion, resulted in same selection of Reference Areas.
 - Portland Harbor site qualified Reference Envelope locations using chemistry (mean PEC-Q and $ESB-TU_{PAH}$) and toxicity results.
 - Anniston PCB Site (Alabama) qualified Reference Envelope locations using PEC-Q and toxicity results.
- **EPA concurs with NCG regarding the use of PAH-17 in calculating the mean PEC-Q**



Reference Areas – Conversion of PCB Data

- For Newtown Creek Data – Phase 1 Total PCB Aroclor data were biased low compared to co-located Total PCB congener data. For the RI, NCG, using regression analysis, showed Total PCB Aroclor $\times 1.75 =$ Total PCB congeners.
- Conversion factor was for Total PCBs.
- The Newtown Creek site-specific conversion factor was likely due to the analytical method and sediment matrix. There is no evidence that the Reference Area locations would follow the same pattern, and there is no co-located Aroclor/congener data from the Reference Areas.
- Phase 2 data were all congener analyses.
- Converting Phase 2 Total PCB congener data to Total PCB Aroclor by dividing by 1.75 would yield arbitrary and possibly artificially low Total PCB concentrations
- **EPA recommends using the Phase 2 Total PCB congener data to derive the mean PEC-Q, using a value of 0.55 as an acceptability criteria, with no conversion**
 - If a Total PCB conversion is determined to be undertaken, the Phase 1 Total PCB Aroclor data should be converted to Total PCB congener data to recalculate the Phase 1 PECQ results.



10-Day Sediment Toxicity Study

- 10-Day study is a standard method that has been successfully used for decades, and is as valid as the 28-Day study.
- Chronic assay measures longer exposure, but acute assay measures the impact of sediment consumption by benthic invertebrates.
- Any stress that may have been on the Study Area exposures was also on the laboratory control and Reference Area exposures, and results were control normalized.
- **EPA concludes that the 10-Day study should be given equal weight as other toxicity tests.**



Wildlife Exposure Modifying Factors (EMFs)

- Inclusion of multiple EMFs (0.25, 0.5, 0.75, and 1) should be in the risk characterization section of the BERA, and not split between the risk characterization and uncertainty sections.
- Multiple EMFs better represents the potential exposure risks to not just the specific species mentioned in the BERA, but to the feeding guilds for which they are surrogates
- Multiple EMFs parallels the Human Health RME and CTE scenarios in the risk characterization
- **EPA concludes that the analysis using multiple EMFs should be in the risk characterization section, with discussion of the uncertainty between factors presented in the uncertainty section.**



Selection of Tissue Thresholds

- The toxicological benchmarks used in the Lower 8.3 Mile Passaic River RI/FFS/BERA were appropriate and technically sound.
- When selecting toxicity thresholds using only values for survival, growth and reproduction, other effects (e.g., behavior, life cycle) which can significantly impact survival, growth and reproduction are ignored.
- **An acceptable alternative would be to use both the Lower 8.3 Mile Passaic River FFS values and the alternate values derived by NCG to bound the upper-end of the risk range.**